increases the number of majority charge carriers in tubulenes; as a result BC_5 nanotubes, which we had previously classified as narrow-gap semiconductor, begin to take on metallic properties (the occurrence of surface conductivity is attributed to electrons from metal atoms)

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INVESTIGATION OF EFFICIENCY INCREASING FOR PACKING COLUMNS USING CARBON NANOTUBES

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The aim of this paper was to investigate the possibility of selectivity increasing for packing columns with carbon nanotubes (CNT). For this purpose we used three types of columns: pure CNT, pure Plate (siliceous gel), mixture of plate and CNT. As analyzed materials three organic compounds have been chosen: hexane, acetone, benzol. The results of the analysis showed, that pure CNT couldn't be used for the chromatography, but adding them in the plate made the selectivity process more effective.

Carbon nanotubes due to the feature properties [1-4], have unique sorption properties. The structure which represents the decanter monolayer curtailed into a tube gives to material very high rate of a specific surface [5]. This indicator is one of the main in the choice of a sorbent of a motionless phase for a gas adsorption chromatography. Therefore, use of tubulen in a nozzle column can raise relevance of the last and compete with capillary columns [6,7].

For comparison of dividing ability of columns it was decided to use values of volumes of keeping of the divided substances at various temperature of columns. The volume of keeping is on a formula:

$$V_r = a * t_r\,[ml]$$

where a — the speed of gas carrier (ml/c), t_r — time of keeping of the divided component (c).

Detecting, by means of the voltmeter, peaks of substances and writing down their time of an exit, data were obtained and errors are calculated. Errors were calculated by the Kornfelda method [8-10].

During the second stage of an experiment columns with four motionless phases have been studied.

The following main results were received and conclusions have been done:

7 samples of a motionless firm phase for a nozzle column are made. All 7 samples were tested in a gas adsorption chromatography. Columns MUNT filled only cannot be used in the analysis. Phases with MUNT on silica gel successfully divided the chosen organic anolytes — hexane, benzene and acetone.

A number of chromatographic analyses with use of the organic matter stated above was carried out. Graphics of dependence of volume of keeping of substances on column temperature are constructed. Results showed that each substance was adsorbed better on silica gel with MUNT, than without them. Increase in concentrantion of nanotubes in a phase positively influenced division of acetone and actually did not affect hexane division in any way.

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